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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/748,418 | 12/30/2003 | Scott F. Mitchell | STC-03-0010 | 7838 |

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09/29/2005

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| EXAMINER |
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DANG, THUAN D

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| ART UNIT | PAPER NUMBER |
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1764

DATE MAILED: 09/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-----------------|-----------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/748,418 | MITCHELL ET AL. | |
| | Examiner | Art Unit | |
| | Thuan D. Dang | 1764 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5, 7-12, and 14-17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Chu (4,891,463).

Chu discloses a process of aromatization of a paraffin such as ethane and propane to a product containing benzene, toluene, C8 aromatics, methane, and ethane in the presence of catalyst containing a ZSM-5 zeolite the aluminum of which is substituted with gallium and a metal such as Pt and a binder such as alumina and silica (the abstract; col. 5, lines 11-20; col. 4, col. 7, lines 54-62).

The ratio of ethane and methane in the product (col. 9, lines 29-35; table 1, and 2).

The condition of temperature, pressure can be found on the paragraph bridging columns 9 and 10.

The ratio of silica and alumina can be found on column 7, lines 16-25.

Chu does not disclose what compounds the produced C8 aromatics are. However, it is expected that these must inherently be xylenes since Chu's process is operated in the presence substantially the same catalyst, feed, and condition.

As disclosed in the full paragraph on column 5, the applicants' claimed amount of platinum is also disclosed by Chu.

Claim 13 is rejected under 35 U.S.C. 103(a) as obvious over Chu (4,891,463) in consideration with the admitted art disclosed in the specification.

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Chu does not disclose using a zeolite as called for in claim 13. However, as disclosed on page 9, this zeolite is well-known.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Chu process by using such a zeolite for making the Chu zeolite to arrive at the applicants' claimed process since it is expected that using any MFI zeolite for making the Chu catalyst would yield similar results.

Claim 6 is rejected under 35 U.S.C. 103(a) as obvious over Chu (4,891,463) in view of Smith et al (6,160,191).

Chu discloses a process as discussed above.

Chu does not disclose the catalyst contains germanium substituted for the silicon. However, Smith discloses an aromatization catalyst of which the silicon can be substituted with germanium (col. 3, lines 47-58; col. 14, lines 15-24).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Chu process by using a zeolite the silicon of which is substituted with germanium to arrive at the applicants' claimed process since it is expected that a zeolite the silica of which is substituted or not would yield similar results.

Response to Amendment

The Declaration under 37 CFR 1.132 filed 7/14/05 is insufficient to overcome the rejection of claims 1-17 based upon Chu (4,891,463) as set forth in the last Office action because:

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In the declaration, applicants shows results of 4 different catalysts and a comparative catalyst in the sole table. However, these results cannot be considered as unexpected results since the claimed process are not these exemplified processes. Note that these catalyst are treated with sulfur and hydrogen. The catalyst in the claims are not the catalyst having been treated with sulfur and hydrogen. Note that it has been established that evidence of unobviousness must be commensurate in scope with the claims. *In re Kulling* 14 USPQ 2d 1056, 1058 (Fed. Cir. 1990); *In re Clemans* 206 USPQ 389 (CCPA 1980); *In re Dill* 202 USPQ 805, 808 (CCPA 1979); *In re Greenfield* 197 USPQ 227 (CCPA 1978); *In re Lindner* 173 USPQ 356, 358 (CCPA 1972); *In re Hyson* 172 USPQ 399 (CCPA 1972); *In re Tiffin* 171 USPQ 294 (CCPA 1971); *In re McLaughlin* 170 USPQ 209 (CCPA 1971); *In re Kennedy* 168 USPQ 587 (CCPA 1971); *In re Law* 133 USPQ 653 (CCPA 1962).

Response to Arguments

Applicant's arguments filed 7/14/2005 have been fully considered but they are not persuasive.

The argument that the ZSM-5 zeolite of the present invention need not have the aluminum substituted with gallium is not persuasive since in claim 5, applicants claim so.

The argument that there are twenty-nine examples of the added metal disclosed of which platinum is one is not persuasive since there are only 14 **specific** different metals excluding unspecified rare earth metals to which platinum belongs. Further, applicants do not show any criticality for selecting platinum from these 14 specific metals.

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The argument that in the affidavit, catalysts are operated by using ethane as the aromatization feed. However, in the affidavit, propane is disclosed. If so, it is unclear what the right feed is? Propane or ethane?

The argument that a catalyst having ZSM-5 deposited with platinum has better performance in selectivity to ethane and aromatic is not persuasive since these results are inconsistent. Further, ethane should be considered as the undesired by-product. Regarding the BTX selectivity, example 2 catalyst has very low selectivity of BTX when compared with the comparative catalyst.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thuan D. Dang whose telephone number is 571-272-1445. The examiner can normally be reached on Mon-Thu.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thuan D. Dang
Primary Examiner
Art Unit 1764

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A handwritten signature in black ink, appearing to read 'Thuan D. Dang', is written over the printed name and title. The signature is fluid and cursive, with a long horizontal stroke extending to the right.